

colleges in Oxford and Cambridge, from the point of view of the teaching of science in public schools. For, though the representatives of the Universities did not accept all the proposals brought forward, they did accept a large proportion of the chief of them, as, for example, the proposal to limit the number of chief science subjects offered by any candidate to two, and another requiring all candidates offering geology, or biological subjects to show an acquaintance with the elements of chemistry and physics, and thus a real beginning in the direction of greater cooperation was made.

We do not, however, attach so much importance to the results attained by these first conferences as we do to the fact that the conferences were held at all. For we feel sure they will be followed by others, that the science masters will be imitated by the masters of other departments, and that whatever the immediate results may be, however great or however small, we might almost say however good or however bad, they will sooner or later—and we think sooner—do much to disentangle many knotty questions, and by generally improving the relations of those who teach and those who examine, do good work both for individuals and for the State, to both of whom the advancement of education is admittedly of vital importance. We hope and believe, moreover, that now the representatives of the colleges at Oxford and Cambridge have led the way in thus conferring directly with the assistant masters, who, in the nature of things, must do most of the actual teaching in the schools, other public bodies concerned with education, such as the University of London and the Civil Service Commissioners, will not be backward in promoting similar conferences whenever there may seem to be a reasonable prospect that they may prove useful. Some examining bodies in the past have been too timid in the matter of reform, and have shown far too much fear of giving the schools a lead, forgetting that the evil of going too slowly may be even greater, at times, than that of going too fast. Conferences like those we are now recording should be immensely helpful to such conservative bodies by giving them the best possible opportunities of getting into touch with the actual educators.

Hitherto, circumstances have tended far too much to make the teachers in schools look upon examiners solely as critics rather than as friends and colleagues. The recent action of the University of London in appointing schoolmasters to examine schoolboys, the proposed consultative committee to assist the War Office on educational questions, and these recent conferences at the old Universities, give good ground for hoping that this state of things is about to pass away, and that teachers and examiners will soon be pulling together more universally than they have done hitherto.

#### NOTES.

DR. J. LARMOR, secretary of the Royal Society and Fellow of St. John's College, has been elected to the Lucasian professorship of mathematics at Cambridge, in succession to the late Sir George Stokes.

At a seismological congress held at Strasburg in April, 1901, statutes were proposed for an international seismological association. The German Government now invites delegates from various countries to meet to discuss these propositions. We learn from *Science* that this meeting will take place at Berne in May.

THE British and African Company's steamer *Bornu*, which arrived at Plymouth on February 27, experienced a heavy

sand-storm on February 19, in latitude 27° north, longitude 15° 30' west, that is, a little south of the Canary Islands. A tremendous sea prevailed for several hours, and so dense was the sand that it was impossible to see either end of the ship from the bridge.

PROF. KOCH has been elected a Foreign Associate of the Paris Academy of Sciences, in succession to the late Prof. Virchow.

WE regret to see the announcement of the death of Prof. W. Harkness, astronomical director of the U.S. Naval Observatory, and Rear-Admiral (retired) of the United States Navy.

PROF. E. MAZELLE has been appointed director of the Imperial Astronomical-Meteorological Observatory at Trieste, Austria.

THE twenty-first congress of the Sanitary Institute will be held this year in Bradford, commencing on July 7. The programme of arrangements made will be given in the supplement to the April *Journal* of the Institute.

REUTER states that a telegram has been received in New York from Mr. Aymé, the United States Consul in Guadeloupe, stating that the French army engineers have established communication with Martinique by means of wireless telegraphy.

REPORTS from Mexico state that the volcano Popocatepetl has been bought up by a group of American financiers for the sum of 1,000,000*l.* The idea is to utilise the valuable deposits of sulphur contained in the volcano, to get which it will be necessary to construct a railway to the summit.

DR. J. W. GREGORY, F.R.S., professor of geology in the University of Melbourne, has met with an accident, necessitating an operation under chloroform. He was conducting scientific investigations in Tasmania at the time, and considerable anxiety has been felt concerning him. The latest news is, however, reassuring.

THE President of the Local Government Board states that the Royal Commission on Sewage Disposal is taking evidence and making investigations on the subject of dangerous contamination of shell-fish by sewage, with a view of ascertaining the measures necessary for obviating risk to the public health from this cause.

MR. W. BOWMAN writes from Kansas City, Missouri, U.S.A., with reference to the flexure of a white marble slab mentioned in *NATURE* of November 20, 1902 (p. 56) and November 27, 1902 (p. 81). He says that many years ago he saw at Windsor, Nova Scotia, in the churchyard of the old parish church, a marble slab bowed in the middle, exactly as described by our correspondents.

MR. HENRY PHIPPS has given Lord Curzon another 10,000*l.* for the promotion of agricultural education or scientific research in India. Colonel Lockwood has been informed by the Secretary of State for India that, in view of the great benefits conferred on the European and the native community in India by the Pasteur Institute in the Punjab, the Viceroy proposes to apply half Mr. Phipps's gift to the establishment of a similar institute in Southern India.

IN the House of Commons on Tuesday the following resolution was moved:—"That the constitution of the Board of Trade has become obsolete, and this House is of opinion that a department presided over by a Minister of Commerce and Industry, having the *status* of a principal Secretary of State, should be substituted for the present office, to which should be entrusted all matters more particularly appertaining to commerce and industry, and to that end that an

inquiry should be forthwith instituted with the view of re-arranging the duties and functions of existing departments." After discussion, both the resolution and an amendment to it were withdrawn.

CENTRAL NEWS despatches from Mexico City report that an eruption of the Colima Volcano commenced on February 21. The disturbance continued practically incessantly until February 24, on which date, at 5.15 a.m., there occurred the most violent eruption known at Colima for many years. At 2.26 a.m. a severe earthquake shock was felt at the town of Tuxpan, near the volcano.

THE Carnegie Institution has made grants to several of the professors of Johns Hopkins University to assist original researches. Prof. Harmon N. Morse has received 300*l.* for an assistant in his researches upon the new method he has evolved for measurement of osmotic pressures; Prof. R. W. Wood 200*l.* to maintain a research assistant; Dr. H. C. Jones 200*l.* for an assistant in his researches in physical chemistry; and Prof. J. J. Abel 200*l.* for the apparatus necessary to his researches in physiological chemistry.

THE council of the Society of Arts, at the request of the executive committee of the International Fire Prevention Exhibition, to be held at Earl's Court during the current year, has decided to offer the following prizes at the exhibition, out of the funds of the Fothergill Trust:—One gold medal, two silver medals and two bronze medals for the best chemical fire engines for town use shown at the exhibition; and similar medals for the most easily worked long ladders, to reach the sill of a window eighty feet above the level of the pavement, which shall also be capable of being rapidly transported over roads not more than twenty-five feet wide.

THE annual general meeting of the Institute of Chemistry of Great Britain and Ireland was held on March 2, when the council presented its report. The council has appointed Prof. J. Millar Thomson (the retiring president), Mr. G. T. Beilby and Dr. J. Lewkowitsch to represent the Institute at the International Congress of Applied Chemistry to be held at Berlin in June next. The council has, whenever occasion has arisen, urged upon authorities making appointments under the Sale of Food and Drugs Acts, the importance of requiring applicants to produce evidence of adequate training in theoretical and practical chemistry, and of special experience in the analysis of food and drugs.

ON February 26 the Italian Minister of Marine and a number of naval experts witnessed some interesting experiments with Signor Siglio's apparatus for giving warning of the approach of submarine craft and other vessels. The Central News correspondent at Naples says that the approach of a large steamer was notified by the apparatus when the vessel was twenty kilometres distant. The approach of a small boat was signalled at a distance of twelve kilometres.

REUTER'S Agency is informed that a strong and unusually well-equipped expedition is on the point of being dispatched to South Africa by the Chartered Company, for the purpose of completing up to Lake Tanganyika the scientific survey of Rhodesia. The expedition will be absent about three years, and will sail from England in time to reach Cape Town at the beginning of April. The work now in contemplation has only been rendered possible by the completion of the Cape to Cairo telegraph up to Tanganyika, which now enables the explorers to synchronise with the observatory at Cape Town. The expedition will have far-reaching results in finally determining the exact geographical posi-

tion of many important centres at present imperfectly laid down upon the maps. The work is under the direct supervision of Sir David Gill, K.C.B., F.R.S., Astronomer Royal at the Cape.

WITH the object of bringing to public notice the economic mineral products of Ireland, the Department of Agriculture and Technical Instruction for Ireland has arranged for the Irish minerals shown at the Cork International Exhibition of 1902 to be placed on view in London. These, together with a few additions, are now to be seen at the Imperial Institute, and the exhibition remains open, admission free, for three months from February 26. The most important materials are building stones of various kinds, mainly lime-stones and granites; and amongst the polished marbles and granites, excellently suited for ornamental purposes, there is considerable variety. Samples of clay and sand, and of pottery and glass manufactured from the same, are shown. Coals and iron-ores are of some importance, but the metal-liferous ores of lead, copper and zinc occupy only a small space. Other minerals include bauxite, gypsum, barytes, salt and diatomaceous earth; slates and paving materials are also well represented. According to the official mining statistics, the minerals annually raised in Ireland amount in value to only about 1/400th part of the total output of the United Kingdom; and it is sincerely to be hoped that this exhibition may have some effect towards developing the mineral resources of Ireland, even though these be not so extensive and varied as could be desired.

MAJOR-GENERAL C. J. B. RIDDELL, C.B., F.R.S., whose death is announced at the advanced age of eighty-six, was one of the pioneers in the cultivation and extension of work in terrestrial magnetism and meteorology. Concurrently with the arrangements made in 1838-1839 for an expedition to the Antarctic regions arose the question of the desirability of extending the contemplated magnetic researches in the southern hemisphere by the establishment of fixed observatories in certain of the British colonial possessions, which should also carry on meteorological inquiries. The stations mentioned were those of St. Helena, the Cape of Good Hope and Toronto. Lieutenant Riddell was selected as director of the Canada (Toronto) branch, subject to the instructions of the Ordnance Department and Major (afterwards General) Sabine, R.A. In 1841 the reduction work for the publication of vol. i. of the Toronto observations was commenced by Sabine, who had the assistance of Riddell, and much commended the practical merits of the system inaugurated at Toronto. General Riddell was responsible for the "Magnetical Instructions for the Use of Portable Instruments Adapted for Magnetical Surveys and Portable Observatories, and for the Use of a Set of Small Instruments for a Fixed Magnetic Observatory," which was printed at the expense of the Government and issued in 1844. He outlived all his associates in magnetic observational work. At the time of his death he enjoyed the unique distinction of being the senior Fellow of the Royal Society in respect of election.

ON February 25 Dr. M. W. Travers gave a lecture on the "Measurement of Low Temperatures" before the Chemical and Physical Society of University College, London. In the experimental demonstrations a thermometer was used of the constant volume type described in the *Phil. Trans.* for 1902, in which the temperature is read directly on the manometer. In the course of the lecture the bulb of the instrument was immersed in liquid hydrogen when the thermometer indicated a temperature of 20°·5 Abs. Solid hydrogen was prepared by boiling the liquid hydrogen under a pressure

of about 5 centimetres by means of a Fleuss pump. To illustrate the differences obtained in measuring the same temperature with thermometers filled with different gases, Dr. Travers concluded by giving his results for the boiling point of oxygen and hydrogen on the scale of various thermometers:—

Oxygen B.P. (He)  $90^{\circ}20$ , (H)  $90^{\circ}10$ , (N)  $89^{\circ}5$ , (O)  $89^{\circ}0$   
 Hydrogen B.P. (He)  $2^{\circ}041$ , (H)  $2^{\circ}022$ .

These results are in agreement with Prof. Callendar's calculations based on a consideration of the physical properties of hydrogen and helium, according to which the boiling point of hydrogen on the absolute scale should be  $0^{\circ}1$  lower than the boiling point as given by a hydrogen thermometer and  $0^{\circ}1$  higher than that given by a helium thermometer.

DURING the past week the British Islands have been visited by a succession of disastrous gales from the Atlantic, accompanied by tremendous seas. The most destructive storm was that of February 27, the centre of which advanced quickly from the south-westward, and was central over Scotland on the morning of that day. The barometer fell there for nearly twelve hours at the rate of more than a tenth of an inch an hour. It was during this gale that a railway train was capsized on the Leven viaduct, near Ulverston, and the havoc to telegraph wires was so great that the Meteorological Office was unable to issue any weather forecasts. At Southport during a squall the wind reached a velocity of ninety-two miles an hour, and at Greenwich, which was more than 300 miles from the centre of the disturbance, a pressure of 33 lb. to the square foot was registered in the early morning. Other disturbances have followed very quickly from the Atlantic, and a renewal of the gales, with heavy rains, has occurred over the entire kingdom.

WE have received the German Meteorological Yearbook for 1901, issued by the Deutsche Seewarte—the twenty-fourth volume of the new series of the publication—containing daily observations and results for a large number of stations and hourly readings at four normal stations. There is considerable advantage in the German system of publication, which ensures uniformity in the meteorological volumes issued by various States. We are glad to see that the anemometrical values are expressed in terms of the revised and reduced factor, instead of that originally determined by Dr. Robinson, which assumes that the velocity of the wind moves with three times that of the anemometer cups. In an appendix Dr. H. König discusses the sunshine records obtained from various stations.

THE *Journal des Transports* reports that the Governor-General of French West Africa has recently sent out a surveying party to trace out a new railway in Senegal, between Thiès and Kayes. The line will be about 466 miles in length.

MESSRS. WORMS AND CO., writing to the *Times* of February 26, give the translation of a letter which they have received from the French Under-Secretary of State for Posts and Telegraphs, in which it is stated that a fresh Franco-English Telephonic Convention has just been signed which will permit of telephonic communication between the two countries being extended to provincial towns. The existing convention only authorises communications between Paris and London, but as soon as the new convention has received the approval of the authorities in both countries, this limitation will be removed. This extension, we do not doubt, will be cordially welcomed by the public on both sides of the Channel.

ACCORDING to the *Westminster Gazette* a conference on railway electrification is now being held, at which all the great railways are represented. The main object of the conference is to secure uniformity in electrical plant, so that the rolling stock of the various companies shall be able to travel indiscriminately over any of the lines. Such details as the distance between centre and side rails, design of motors and locomotives and so forth are being considered, and in addition many other points in relation to the electrification of steam railways. It seems that the railways are awakening to the necessity of immediate reform, especially in running their suburban lines. The object of the conference is very important, and one which we have emphasised on several occasions in these columns.

SIR OLIVER LODGE is well known to have been one of the pioneers in wireless telegraphic work, both on the theoretical and practical side; to him belongs the credit of having been the first to suggest the use of tuned systems, and he devised, and published many years ago, methods by which syntony might be practically attained. In addition to this his work on the coherer is not likely to be forgotten. We are glad to learn, therefore, that he has been engaged, in conjunction with Dr. Muirhead, in perfecting his apparatus for both transmitting and receiving, and that the system has now reached a thoroughly practical form. The Eastern Extension Telegraph Co. is experimenting with the Lodge-Muirhead apparatus on its two new cable ships, the *Restorer* and the *Patrol*.

THE daily papers last week contained announcements of three new inventions of a revolutionary character in the field of wireless telegraphy. The first relates to an invention by Mr. P. C. Hewitt, the inventor of the vapour lamp recently described in these columns, who, it is stated, has devised a method of setting up powerful and continuous oscillations in the transmitting mast; no particulars are given. The other two are of a more sensational character, and relate to the transmission of power by ether waves. Prof. Braun, it is said, has declared that he sees no further difficulty in principle, and even no serious technical obstacle to the wireless transmission of power, and Mr. T. H. Williams is credited by the *Westminster Gazette* with having worked out a wireless method of running electric motor-cars which only requires further experiment and more capital to be made commercially practicable. Until more definite particulars are published as to these systems it will be necessary to suspend judgment upon them.

No. 159 of the *Journal* of the Institution of Electrical Engineers, which has just been issued, contains several interesting papers. These include Mr. Swinburne's presidential address, Sir Oliver Lodge's paper on electrons—which is considerably expanded from the spoken address—and Messrs. Hutton and Petavel's paper on high temperature electrochemistry; to these we have already referred in these columns. The greater part of the remaining space is filled by Prof. Fleming's paper on the photometry of electric lamps and the discussion to which it gave rise. Prof. Fleming, in this paper, describes a new form of standard incandescent lamp made by enclosing an "aged" filament in a large bulb, which he states answers very well as a working standard. The paper also deals with some of the many problems which photometry presents, and with the discussion, in which Mr. Harcourt, Dr. Glazebrook, Sir W. Abney, Mr. Trotter, Prof. Ayrton, M. Violle and Mr. J. Petavel took part amongst others, forms a most valuable contribution to the subject from both the theoretical and practical sides.



THE Meteorological Office pilot chart for March directs attention to the unusually cold water observed at various times during last December in mid-ocean, on the Transatlantic steamer routes, surface temperatures as low as  $38^{\circ}$  to  $45^{\circ}$  being recorded where the normal values are from  $50^{\circ}$  to  $53^{\circ}$ . On the western coasts of the British Isles, also, for about a week from December 5, when an easterly type of weather prevailed, the shore water was very cold,  $36^{\circ}$  to  $38^{\circ}$  being recorded even up the west of Ireland, and at Newquay, on the Cornish coast, the minimum was  $41^{\circ}$ . The general range of water temperature during the month was from  $10^{\circ}$  to  $14^{\circ}$  at the western stations, against from  $4^{\circ}$  to  $7^{\circ}$  at the east coast ones. At the beginning of February the first ice of the season was drifting down the east coast of Newfoundland and blocking the harbour of St. John's.

A LENGTHY article on "White Water" in the March pilot chart of the Meteorological Office gives many interesting particulars relating to the phenomenon known to seamen as the milky sea, which seems to be more frequently observed in the tropical waters of the Indian Ocean than elsewhere. Various observers describe the scene as "ghastly," "awe-inspiring," "wild, weird and rather ancient marinerish," &c., and Captain Carpenter, of the *Challenger*, states that when in the milky sea a ship seems to be passing through a sort of luminous fog in which all sense of distance is lost; sea and sky seem to join, and there is almost as much danger of collision as in a true fog. Although the phenomenon is doubtless a form of phosphorescence, no adequate explanation of it has yet been arrived at.

A REPORT on the fishes collected in the expedition of 1898 to Socotra and southern Arabia has been communicated to the Vienna Academy by Herr F. Steindachner. In addition to several rare species hitherto only known from the Atlantic Ocean, the collections contained six new forms.

No. 80 of the *Communications* from the Leyden Physical Laboratory contains an account of Dr. L. H. Siertsema's measurements of the magnetic rotation of the plane of polarisation of liquefied chloride under atmospheric pressure. For sodium light the value found is  $0.01372$ , and the rotation dispersion is normal, differing little from that with gases and with water.

UNDER the title "The Practice Curve," Mr. J. H. Bair, in a special supplement of the *Psychological Review*, describes experiments for investigating various aspects of association, such as the relation between the sensory and motor side of our mental life, the processes involved in the formation and modification of habit, and endeavours in general to find a satisfactory physiological and psychological explanation for the phenomena of association.

A PAPER on the protective action of wire gauze against explosions has been communicated to the Vienna Academy of Sciences by Dr. H. Mache. The author considers the case where a homogeneous gas-mixture traverses the gauze with a velocity less than the rate of propagation of an explosion. In this case the flame approaches the gauze, but comes to a standstill in front of it. This effect is attributed to the absorption of part of the heat of combustion by the wires, whereby the rate of propagation of the explosion is decreased. By means of certain assumptions, the author investigates a formula for the distance at which the flame stops short of the gauze.

A USEFUL glossary of the minerals and mineral localities of Texas has been prepared by Dr. F. W. Simonds (*Bulletin* No. 5 of the University of Texas Mineral Survey).

Such substances as lignite, pearls, pottery clay and petroleum are included.

IN the *Proceedings* of the Cotteswold Club (vol. xiv. part ii., 1903) there is a detailed account of the Rhætic strata in north-west Gloucestershire, by Mr. L. Richardson, who adds many new particulars relating to well-known sections, and describes some fresh localities. There is also the address of the president, Mr. E. B. Wethered, who discusses the origin of certain Palæozoic sandstones and limestones.

PROF. W. W. WATTS contributes an excellent account of the older rocks of Charnwood Forest, with a map showing the structure of the ground if the Trias and more recent deposits were stripped off (*Proceedings* of the Geologists' Association, vol. xvii., parts vii. and viii.). The structure is that of an anticline traversed by thrust-planes and drop faults. Attention is also directed to the terraced and smoothed surfaces of the granite under Keuper Marl at Mountsorrel. These features are attributed to wind erosion in Triassic times, and they are well depicted in a photographic plate.

"THE Greatest Flying Creature" is the title of an essay by Prof. S. P. Langley, and it is introductory to a paper on the pterodactyl *Ornithostoma ingens* by Mr. F. A. Lucas (Smithsonian Report for 1901, 1902). The questions discussed are:—"What has Nature herself done in the way of large flying machines, and are the birds which we see now the limit of her ability to construct them?" Prof. Langley gives particulars relating to various insects and birds, of the wing surface and its relation to the weight of the creature; and these show that the larger the insect or bird, the smaller is the relative supporting surface. He adds, "The explanation may be very near at hand, but it is not to me evident."

SIGNOR LUIGI BRUGNATELLI describes (*Rendiconti di Reale Istituto Lombardo di Sc. e. Lett.*, 2, xxxv. p. 869) a new mineral, "artinite," from the Valle Lanterna, which is interesting chemically as a basic hydrated magnesium carbonate not before known, and interesting petrologically as a final decomposition product of a peridotite rock. Its chemical formula is  $\text{MgCO}_3 \cdot \text{Mg}(\text{OH})_2 \cdot 3\text{H}_2\text{O}$ . Its hardness is about 2.5, its specific gravity about 2.02, and its mean refractive index about 1.53. It is biaxial and optically negative, but its crystallographic system could not be determined with certainty. It is probably monoclinic.

THE Cambridge University Press has published solutions of the examples in the "Elements of Hydrostatics," by Mr. S. L. Loney, who has prepared this "Key" to his book.

A SELECTION of Dr. G. Stanley Hall's papers on the psychology of children and its relation to pedagogics has been translated into German by Dr. J. Stimpff, and published by Herr O. Bonde, Altenburg, under the title "Ausgewählte Beiträge zur Kinderpsychologie und Pädagogik." Dr. Stimpff contributes an introduction, in which he gives an appreciative account of Dr. Hall's valuable studies of child psychology.

THE first volume of "The Fauna and Geography of the Maldive and Laccadive Archipelagoes," edited by Mr. J. Stanley Gardiner, has been completed by the issue of the fourth part from the Cambridge University Press. This part contains papers on the Cephalochorda collected by the expedition of 1899 and 1900, the birds, earthworks, the Maldive and Laccadive groups, with notes on other coral

formations in the Indian Ocean, marine crustaceans and the Lithothamnium. The first part of the second volume will be published next June.

An index, prepared by Mr. Clement Reid, F.R.S., for De la Beche's "Report on the Geology of Cornwall, Devon and West Somerset," has recently been published for the Geological Survey, and can be obtained from any agent for the sale of Ordnance Survey maps. The Report was published in 1839, unfortunately without an index. No less than 1500 copies were issued, and the memoir is now out of print. It has, however, become one of the classics of geology, and being a permanent work of reference, an index has been a great desideratum, which has now been supplied.

MESSRS. JOHN J. GRIFFIN AND SONS, LTD., have sent for our inspection a simple mechanical device for obtaining rapidly any required set of numbers having the same ratio among themselves as any other given set of numbers. The instrument is known as the "ratiometer," and was designed by Mr. A. E. Munby. It is made of boxwood, and consists of two graduated rules, which can be set at any angle, which with one edge of a T-square form a right-angled triangle. By means of a tongue and groove the base of the triangle slides along the stock of the T-square. The ratiometer should prove of great assistance to examiners for the reduction of marks. It would be useful in laboratories, where it could be used for such operations as the conversion of centimetres to inches, or of scales of temperature, and in the office and workshop for converting one linear scale into another when no simple ratio exists between the two, or for finding the value of various quantities of goods.

THE international committee on atomic weights, organised in 1900, and composed of more than fifty representatives from chemical and other societies, has by vote designated a smaller body of three representatives to carry on the future work of the committee. The three elected members, Profs. Clarke, Thorpe and Seubert, have just issued their annual report and recommendations. It is pointed out that upon the question as to whether oxygen or hydrogen shall be taken as basis of the atomic weight numbers, opinion at the present time seems to be evenly divided. To force the adoption of either appears to be impossible, and experience must be the final arbiter. That standard which best serves to coordinate chemical and physical knowledge will ultimately be chosen, and the other will gradually fall into disuse. Tables are appended to the report in which both standards of atomic weights are represented. In view of recent work, the committee has thought it necessary to make changes and recommendations in respect to the atomic weights of antimony, germanium, hydrogen, lanthanum, mercury, palladium, selenium, tin, uranium and zirconium. Radium appears for the first time in the table with an atomic weight = 225.

Up to the present time very few instances of chemical changes which exhibit periodicity have been observed. Very recently it was found by Ostwald that the velocity of solution of certain samples of chromium in acids does not change in a continuous manner as would be theoretically anticipated, but that the rate of solution increases and decreases periodically. An apparently similar change has been found by Bredig and Weinmayr in the catalytic decomposition of hydrogen peroxide by means of metallic mercury. An account of the authors' experiments is given in the current number of the *Zeitschrift für physikalische Chemie*. In successive intervals of time the amounts of hydrogen peroxide are alternately larger and smaller, and the alter-

nation appears to be simultaneous with a change in the character of the mercury surface. Preliminary experiments indicate that the alternations of the catalytic activity of the mercury are intimately connected with alternations in its electrical condition. In the inactive condition the mercury is considerably more electro-positive than in the active condition.

### OUR ASTRONOMICAL COLUMN.

#### ASTRONOMICAL OCCURRENCES IN MARCH:—

- March 10. 4h. 59m. to 5h. 50m. Moon occults  $\alpha$  Cancri (mag. 4.3).  
 14. 11h. 40m. Minimum of Algol ( $\beta$  Persei).  
 15. Venus. Illuminated portion of disc = 0.904, of Mars = 0.991.  
 15. Venus. Apparent diameter =  $11''.2$ , Mars =  $13''.8$ .  
 17. 8h. 29m. Minimum of Algol ( $\beta$  Persei).  
 18. 16h. 1m. to 17h. 25m. Moon occults  $\chi$  Ophiuchi (mag. 5.0).  
 21. 7h. Sun enters Aries, Spring quarter commences.  
 25. Perihelion Passage of Giacobini's comet (D 1900).  
 28. 14h. 5m. Annular eclipse of the sun, invisible at Greenwich.  
 28. 20h. Mars in opposition to the sun.  
 30. 20h. Venus in conjunction with the moon, Venus  $2^\circ 13' N$ .

COMET 1903 *a*.—M. Paul Brück, of the Besançon Observatory, publishes an ephemeris for this comet, from which the following is an abstract, in No. 3847 of the *Astronomische Nachrichten*.

#### Paris 12h. M.T.

Date.	<i>a</i> . app. h. m. s.	$\delta$ app.	log <i>r</i> .	log $\Delta$	Brightness.
Mar. 6	0 13 52	+17 27.9			
" 8	0 18 26	+18 3.9	9.6919	0.0141	18.1
" 10	0 22 57	+18 31.8			
" 12	0 27 18	+18 48.1		9.9602	
" 14	0 31 22	+18 48.5			
" 16	0 35 3	+18 27.9	9.6251	9.9010	41.3

From an observation by M. Chofardet on February 13, a correction of  $\Delta a = -4s$ ,  $\Delta \delta = -0''.2$  to this ephemeris was obtained, and the magnitude was recorded as about 9.0.

The comet was observed at Lyons by MM. G. le Cadet and J. Guillaume on various dates between January 21 and 29, and they record it as "a faint nebulosity without elongation and without tail."

A new set of elements, published in the same journal by M. G. Fayet, gives the time of perihelion passage as March 18.7092 M.T. Paris.

COMET 1902 *b* (PERRINE).—An ephemeris for this comet is published in No. 3847 of the *Astronomische Nachrichten*, by Herr Ebell, as a continuation of that which appeared in No. 3841 of the same journal. It indicates that the comet is rapidly becoming fainter, and an observation made at Strasburg on February 17 showed that, on that date, the magnitude was only about 11.5.

HERSCHEL'S NEBULOUS REGIONS OF THE HEAVENS.—Commenting on Dr. Isaac Roberts's recently published results, which indicated that only four of the fifty-two nebulous regions described by Herschel in 1811 really contained nebulosities, Prof. E. E. Barnard remarks that this question is likely to prove an important factor in future discussions as to the physical condition of the universe, and then proceeds to explain that the negative results obtained by Dr. Roberts may be due to insufficient exposure, and that it is highly improbable that Herschel should have been so palpably mistaken in forty-eight cases out of his fifty-two regions.

In support of his argument Prof. Barnard proceeds to describe several photographs, which he has obtained with a 1.5-inch magic lantern lens of 4.9 inches equivalent focus, which suggest that in one or two cases at least Dr. Roberts's conclusions require further consideration.

One striking instance is illustrated by a reproduction showing a great curved nebulosity which embraces the